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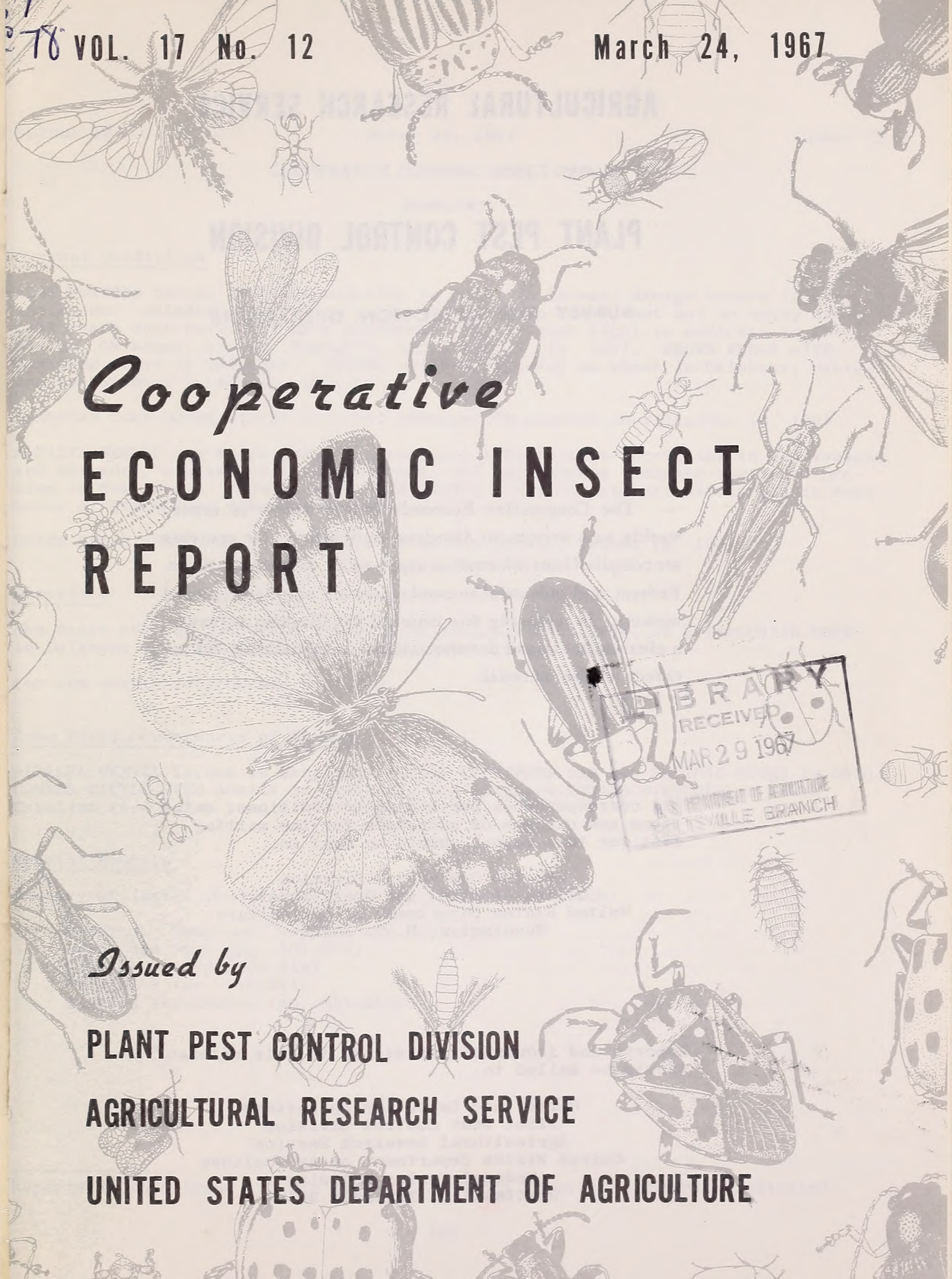

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VOL. 17 No. 12 March 24, 1967

Cooperative
ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION
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AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 17 March 24, 1967 Number 12

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMY CUTWORM larvae continue moderate to heavy in Kansas; damage severe in many instances. GREENBUG increasing in small grains in Texas, but not so heavy as in past years when outbreaks have occurred. Populations light to moderate in New Mexico, Oklahoma, Kansas, Missouri, and Arkansas. (p. 197). BROWN WHEAT MITE damaging wheat in Oklahoma. WINTER GRAIN MITE heavy on wheat in Oklahoma, damaging in northern Texas. (p. 198).

EUROPEAN CORN BORER winter survival averaged 78 percent in Illinois. (p. 198).

ALFALFA WEEVIL egg hatch heavy in Arkansas; infestations increasing in Mississippi and Missouri, adults active in Colorado, and egg numbers indicate continued problem in New Jersey. EGYPTIAN ALFALFA WEEVIL heavy in Arizona; widespread in some areas of State with some control needed. (p. 198).

GREEN PEACH APHID heavy on spinach in Zavala County, Texas. (p. 199).

Detection

New State records include a MOSQUITO in Virginia, (p. 201); an EPIPASCHIID MOTH in Delaware, (p. 203); and three ANTS in Hawaii, (p. 214).

For new county records see page 203.

Some First Occurrences of Season

ALFALFA WEEVIL larvae in Maryland; GREEN FRUITWORM and two NOCTUID MOTHS in Ohio; COMMON CATTLE GRUB adults in Oklahoma; and southern POTATO WIREWORM in South Carolina (see light trap collections, p. 203).

Special Reports

Summary of Insect Conditions in the United States - 1966

- Potatoes, Tomatoes, Peppers (pp. 204-207).
- Beans and Peas (pp. 207-208).
- Cole Crops (pp. 209-210).
- Cucurbits (pp. 210-211).
- General Vegetables (pp. 211-214).

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WEATHER OF THE WEEK ENDING MARCH 20

HIGHLIGHTS: Cold and stormy, northern Rockies to New England; heavy snows northern California and the Northeast; turning very cold in Southeast with heavy freezes Carolinas and Georgia.

PRECIPITATION: Moist Pacific air produced 2-5 inches of rain along the northern Pacific coast during the week with heavy snow in the Sierras of northern California in the first half of the week. Snow accumulated to 15 feet at Norden, California, and at Squaw Valley 8 feet of new snow fell in 60 hours. Winds 50-90 m.p.h. drifted the snow and filled the mountain highway passes. Violent thunderstorms occurred March 13 from the Ohio River Valley to Virginia and southwestern New York, while freezing rain slicked the highways in New England. Later in the week, light to moderate snow fell from the northern Plains to the Great Lakes, and heavy snow, 10-16 inches in some areas, fell over northeastern Pennsylvania, northern New Jersey, southeastern New York, and southeastern New England. Wide areas across the South received no precipitation while scattered rains in parts of the Great Basin, the southern Rockies, and the central Plains were too light to be of much benefit.

Weather continued on page 202.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMY CUTWORM (Chorizagrotis auxiliaris) - KANSAS - Larvae continue moderate to heavy on small grains in Cowley County. Larval counts on wheat as high as 20 per square foot in some fields. Damage severe in many instances. Most larvae in late instars and nearing pupation. Numbers continue light on small grains in Barber County. Ranged 6-10 per square foot in field of seedling alfalfa in Cowley County. Damage severe. (Simpson).

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - Medium in small grains in scattered areas of Maricopa County. Generally light to medium in many Yuma County barley fields. (Ariz. Coop. Sur.).

GREENBUG (Schizaphis gramium) - NEW MEXICO - Counts per linear foot on wheat ranged 6-15 near Roswell, Chaves County, and 4-10 near Clovis, Curry County. (Mathews). TEXAS - Sporadic light to heavy populations extend into most small grain producing counties in northern half of State. Infestations generally light in northern High Plains, moderate in lower High Plains, light to moderate in Rolling Plains and light throughout northern and central areas. Although populations increasing, infestations not as heavy as in previous seasons when outbreaks have occurred. (Texas Coop. Rpt.). Populations continue to increase. Counts range up to 4,000 per row foot in few fields in eastern Swisher County; many fields in western half of county with 1,500-2,000 per row foot. Parasitic wasps appearing in area. Counts in Castro, Deaf Smith, and Parmer Counties decreased from last month but still range 500-600 per row foot. Heavy infestations widespread in Armstrong County; counts highest in southern half of county. Infestations noted in Kaufman County on oats, rye, and wheat; apparently building up. Counts ranged 0-366 per row foot, averaged 25. Damage also noted in Carson, Ochiltree, and Randall Counties. (Daniels, Wheeler, Turney). OKLAHOMA - Populations decreased in scattered areas due to freezing weather, but apparently unaffected in many other areas. Reported heavy in wheat areas of Blaine, Caddo, Grady, Canadian, Cotton, and Marshall Counties. Moderate in Beckham (50-200 per linear foot), Kingfisher, Tillman (50 per linear foot), and Jefferson Counties; light in Alfalfa and Bryan Counties. Many fields being sprayed throughout southwestern quarter of State. (Okla. Coop. Sur.). ARKANSAS - Populations increasing in Pope County to extent growers are considering treatments. (Barnes). KANSAS - Counts per foot of row by county as follows: Greenwood, 0-5; Cherokee, 20-30; Labette, 35-40; Montgomery, 0-10; Chautauqua, 0-5. (Simpson). MISSOURI - Very light in southwest area. Counts in 9 fields ranged 2-8 per foot of row. Average in all fields, 1.8 per foot. (Munson).

POTATO PSYLLID (Paratrioza cockerelli) - ARIZONA - Light egg deposits found on potatoes in fields in Litchfield and Peoria areas, Maricopa County. No nymphs or adults found. (Ariz. Coop. Sur.).

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - MISSISSIPPI - Adults light; first-generation present in middle nymphal stages in Oktibbeha County. (Dinkins). FLORIDA - Very light on rye and oats at Gainesville, Alachua County. (Mead).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Light numbers caused light damage to alfalfa in areas of western Maricopa County. Light and scattered infestations appearing in Yuma County. Some parasitism evident. (Ariz. Coop. Sur.). TEXAS - Averaged 5-10 per sweep in most small alfalfa acreages in Hidalgo County. (Parker). OKLAHOMA - Heavy in alfalfa in Grady County. Reported moderate and spotty in Beckham County. (Okla. Coop. Sur.). MISSISSIPPI - Very light on alfalfa in Pontotoc County. (Dinkins). FLORIDA - Nymphs and adults averaged 2 per sweep on alfalfa at Gainesville, Alachua County. (Fla. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (*Ostrinia nubilalis*) - ILLINOIS - Winter survival of borers averaged 78 percent for State. Percent survival by section as follows: West 81, central 78, west-southwest 75, southwest 70. (Ill. Ins. Rpt.).

SOUTHWESTERN CORN BORER (*Zeadiatraea grandiosella*) - MISSOURI - Winter mortality very low in southwestern area; less than 5 percent in 5 fields checked (100 girdled plants per field). (Munson).

SMALL GRAINS

BROWN WHEAT MITE (*Petrobia latens*) - OKLAHOMA - Moderate to heavy numbers continue to damage wheat in Grady, Canadian, Kingfisher, Beckham, Blaine, and Cotton Counties. Light in Alfalfa and Tillman Counties. (Okla. Coop. Sur.). KANSAS - Ranged up to 50 per foot of row in some Cowley County wheat. (Brooks, Simpson). Light populations reported in Barber County. (Simpson).

WINTER GRAIN MITE (*Penthaleus major*) - KANSAS - Continues light on wheat in many southwest area fields; 15-25 per foot of row. (Simpson). OKLAHOMA - Heavy in wheat in Grady County. (Okla. Coop. Sur.). TEXAS - Continues to damage many untreated fields of small grains throughout northern area. (Turney).

ENGLISH GRAIN APHID (*Macrosiphum avenae*) - KANSAS - Ranged 5-10 per foot of row in few Labette and Montgomery County wheat fields. (Simpson). FLORIDA - Very light on rye and oats at Gainesville, Alachua County. (Fla. Coop. Sur.).

A LEAFHOPPER (*Graminella nigrifrons*) - FLORIDA - Very light on rye and oats at Gainesville, Alachua County. (Mead).

FORAGE LEGUMES

ALFALFA WEEVIL (*Hypera postica*) - MISSISSIPPI - Populations increased in Pontotoc County. Larvae average 60 per square foot in untreated alfalfa, 16 per square foot in flame treated alfalfa. (Dinkins). ARKANSAS - Egg hatch heavy. Examination of stems showed larger number of empty egg shells than eggs in stems in Mississippi County. (Miner). Small larvae ranged 8-10 per stem in Lonoke County. Some treatments made March 17. (Barnes). Light infestations of small larvae observed in Fulton County. (Roberts). MISSOURI - Numbers increasing rapidly in alfalfa. Ranged 20-30 per square foot in Pemiscot County. (Jones). INDIANA - Cold, wet weather curtailed larval activity in Ohio River area. (Hintz). No eggs or larvae present in alfalfa stem samples collected in Marion, Hancock, Shelby, Rush, Fayette, Franklin, and Wayne Counties. (Huber). MARYLAND - First larvae of season, mostly first instar, found March 16 on alfalfa near Atholton, Howard County. Mating adults also observed. (U. Md., Ent. Dept.). NEW JERSEY - Egg numbers in alfalfa indicate infestations will continue troublesome this season. Overwintering adults numerous in most alfalfa. (Ins.-Dis. Newsltr.). COLORADO - Adults active in western area; also observed in Larimer County. (Bulla, McLaughlin).

EGYPTIAN ALFALFA WEEVIL (*Hypera brunneipennis*) - ARIZONA - No increase observed in Maricopa County alfalfa; larvae average 2 per terminal in most fields. Counts 250-400 per 100 sweeps in Yuma County. Infestations widespread in Pinal County; control measures needed in many fields. (Ariz. Coop. Sur.).

CLOVER LEAF WEEVIL (*Hypera punctata*) - MARYLAND - Larvae beginning to damage red clover near Lanham, Prince Georges County. (U. Md., Ent. Dept.). MISSOURI - Larvae averaged 1.25 per square foot in 3 fields in southwest area. (Munson). KANSAS - Larvae ranged 3-8 per square foot on alfalfa in Cowley County field. Some damage apparent. (Simpson).

A SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata tenella) - NEW MEXICO - Very light on alfalfa in Dona Ana County south of Las Cruces. (Elson).

ALFALFA CATERPILLAR (Colias eurytheme) - NEW MEXICO - Heavy on some alfalfa near Roswell, Chaves County. (Chappell).

PEA APHID (Acyrthosiphon pisum) - NEW MEXICO - Very light to light on alfalfa near Roswell, Chaves County. (Mathews). TEXAS - Very light on vetch in Kaufman County and on alfalfa in Brazoria County. Counts in Brazoria County averaged 2-3 per sweep over 600 acres of alfalfa. (Turney, Parker). FLORIDA - Nymphs and adults averaged 3-4 per sweep on alfalfa at Gainesville, Alachua County. (Fla. Coop. Sur.). KANSAS - Ranged 25-50 per square foot in many seedling alfalfa fields in Wilson, Labette, Montgomery, and Cherokee Counties. Very light,0-10 per square foot found elsewhere in southeast area. (Simpson). MISSOURI - Numbers in established stands of alfalfa in southwest area very low; 0-40 per 100 sweeps. In fall-seeded alfalfa, some damage observed in spots where aphids ranged 8-30 per plant. (Munson). MARYLAND - Light on alfalfa near Atholton, Howard County. (U. Md., Ent. Dept.).

SOUTHERN GREEN STINK BUG (Nezara viridula) - FLORIDA - Very light on alfalfa at Gainesville, Alachua County. (Mead).

LYGUS BUGS (Lygus spp.) - UTAH - Lygus spp. and L. elisus active in St. George and Hurricane areas of Washington County on roadside margins of alfalfa fields. (Knowlton).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - TEXAS - Averaged 5-10 per sweep in most small alfalfa acreages in Hidalgo County. (Parker). FLORIDA - Very light on alfalfa at Gainesville, Alachua County. (Fla. Coop. Sur.).

SUGARBEETS

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Continues moderate to heavy on sugarbeets in all areas of Maricopa County. (Ariz. Coop. Sur.).

GENERAL VEGETABLES

CABBAGE LOOPER (Trichoplusia ni) - TEXAS - Although heavy in Rio Grande Valley earlier, populations decreased to subeconomic level and presently not troublesome. (Deer, Parker).

GREEN PEACH APHID (Myzus persicae) - TEXAS - Heavy on spinach in Zavala County; has been problem all season. Light on spinach in Hidalgo County but apparently increasing. Light on spinach in Brazoria County. (Rainey, Lovelace, Parker). MARYLAND - Light to medium on overwintered cabbage and turnips at Fairland, Montgomery County. (U. Md., Ent. Dept., Mar. 10).

BEAN APHID (Aphis fabae) - CALIFORNIA - Heavy on artichoke plantings in Madison, Yolo County. (Cal. Coop. Rpt.).

ONION THRIPS (Thrips tabaci) - TEXAS - Few present on onions in several Rio Grande Valley fields. However, seldom builds up to damaging numbers in this area. (Deer, Parker).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - NEW MEXICO - Probably this species, very light to light on onions in Dona Ana County south of Las Cruces. (Elson).

ARGENTINE ANT (Iridomyrmex humilis) - CALIFORNIA - Heavy on artichoke plantings in Madison, Yolo County. (Cal. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

GREEN FRUITWORM (*Lithophane antennata*) - OHIO - First flights occurred on evening of March 10. (Rings).

NOCTUID MOTHS (*Eupsilia* spp.). - OHIO - First flights of *E. morrisoni* and *E. vinulenta* occurred March 10 when the maximum daily temperature was 62°F. *E. morrisoni* females laid eggs on March 14. (Rings).

A PYRALID MOTH (*Aglossa caprealis*) - CALIFORNIA - Larvae heavy on bark and trunks of apple trees in Caruthers, Fresno County. (Cal. Coop. Rpt.).

A LEAF ROLLER MOTH (*Platynota stultana*) - ARIZONA - Some activity noted in nurseries and greenhouses in Yuma County. (Ariz. Coop. Sur.).

OLIVE SCALE (*Parlatoria oleae*) - CALIFORNIA - Medium on peach and light on almond locally in Colusa, Colusa County. Parasites have been introduced for control. (Cal. Coop. Rpt.).

CITRUS

CITRUS THRIPS (*Scirtothrips citri*) - ARIZONA - Appearing in Yuma County; few infestations noted in Maricopa County. (Ariz. Coop. Sur.).

TEXAS CITRUS MITE (*Eutetranychus banksi*) - TEXAS - Heavy infestations in 1966 have resulted in some fruit damage this year in the Rio Grande Valley. (Parker).

ORNAMENTALS

ARMORED SCALES - FLORIDA - All stages of *Pseudococcus adonidum* moderate at Altamonte Springs, Seminole County, on 160 of 200 *Pilea cadierei*, light on 5 of 500 heartleaf philodendron, moderate on 45 of 100 *Philodendron mandaianum*, severe on 1 dracaena, and severe on 1 coffee plant. (Kipp, Feb. 13). *Melanaspis tenebricosa* adults collected on maple and *Chionaspis longiloba* collected on pussy willow north of Cross City, Dixie County. (Graham, Feb. 16). Latter two scales are new county records. (Fla. Coop. Sur.). *Aonidiella orientalis* very light on scarlet firethorn at Hollywood, Broward County. (Hickman, Cervone, Feb. 13).

APHIDS - ARIZONA - *Macrosiphoniella sanborni* appearing on many plants in Maricopa County and heavy on chrysanthemums at Yuma, Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Probably *Macrosiphum rosae* medium on leaf buds of roses in Albuquerque, Bernalillo County. (Heninger).

CALICO SCALE (*Lecanium cerasorum*) - CALIFORNIA - Locally heavy on deciduous magnolia shrubs at San Jose, Santa Clara County. (Cal. Coop. Rpt.).

A COREID BUG (*Jadera haematoloma*) - OKLAHOMA - Heavy numbers damaging western soapberry in Durant, Bryan County. (Okla. Coop. Sur.).

FALSE SPIDER MITES (*Brevipalpus* spp.) - CALIFORNIA - *B. obovatus* adults medium on honeysuckle vines in Escondido, San Diego County. *B. essigi* eggs and adults light to medium on fuchsia nursery stock in San Luis Obispo County. (Cal. Coop. Rpt.).

AN ERIOPHYID MITE (*Diptacus swensoni*) - CALIFORNIA - Medium on undersides of leaves on English holly nursery stock at Millbrae, San Mateo County. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

EASTERN TENT CATERPILLAR (*Malacosoma americanum*) - ALABAMA - Widespread hatching and early feeding on cherry continues in southern area. (Granberry).

EUROPEAN PINE SHOOT MOTH (*Rhyacionia buoliana*) - NEW JERSEY - Infestations reported in Chirstmas tree plantings. (Ins.-Dis. Newsltr.).

SMALLER EUROPEAN ELM BARK BEETLE (*Scolytus multistriatus*) - OHIO - Collected in Tiffin, Seneca County. This is a new county record. (Porter).

APHIDS - ALABAMA - *Eulachnus* spp. infestations heavy on pine; 100-200 aphids infest outer 6-8 inches of each pine limb in most localities throughout east-central area. Heavy honeydew dripping into streets. (Shumack et al.). CALIFORNIA - *Pterocomma flocculosa* heavy on willow along State highway in Arroyo Grande, San Luis Obispo County. (Cal. Coop. Rpt.).

OYSTERSHELL SCALE (*Lepidosaphes ulmi*) - CALIFORNIA - Heavy on willow along State highway in Arroyo Grande, San Luis Obispo County. Trees weakened by *Pterocomma flocculosa* infestations show greatest damage. (Cal. Coop. Rpt.). MARYLAND - *L. ulmi* heavy on maple at Shadyside, Anne Arundel County. (U. Md., Ent. Dept.).

A SOFT SCALE (*Eriococcus quercus*) - OKLAHOMA - Noted on blackjack oak in Midwest City, Oklahoma County. (Okla. Coop. Sur.).

MAN AND ANIMALS

MOSQUITOES - LOUISIANA - Larval collections in Jefferson Parish contained *Aedes vexans*. *Anopheles quadrimaculatus*, *Culex restauans*, *C. salinarius*, and *Culiseta inornata*, Adult activity very low week ending March 10. Larval collections for week ending March 17 contained same species. Adult activity, however, increased throughout parish due to warmer weather. Mosquito counts highest in western portion of parish. (Stokes). ARKANSAS - Due to warm temperatures, large numbers of larvae, primarily *Culex pipiens quinquefasciatus*, developed in still water on level land areas. (Barnes). VIRGINIA - *Aedes cinereus* reported from State for first time. Single females collected during 1966 in light trap and Malaise trap in Franklin County June 16; in light trap in Pittsylvania County June 25; and in light trap in Roanoke County August 19. Collected by W. J. Gladney. Det. by A. Stone. (Isakson). MINNESOTA - State Health Department reported 13 cases of California encephalitis (not Western equine encephalitis) in children in Houston and Winona Counties during the summer of 1966. The mosquito vector in the southeast area cases is unknown. (Minn. Ins. Rpt.).

SCREW-WORM (*Cochliomyia hominivorax*) - No cases reported in U.S. March 12-18. Total of 27 cases reported in portion of Barrier Zone in Republic of Mexico March 5-11 as follows: Territorio sur de Baja California 2, Sonora 23, Coahuila 1, Tamaulipas 1. Three cases reported from Mexico south of Barrier Zone. Barrier Zone is area where eradication operations are underway to prevent establishment of self-sustaining population un U.S. Screw-worm flies released March 12-18: Texas 5,064,000, Mexico 89,384,000. (Anim. Health Div.).

COMMON CATTLE GRUB (*Hypoderma lineatum*) - OKLAHOMA - Ranged 3-12 per head of cattle in Marshall County, moderate in Mayes County. Adults active in Seminole County. (Okla. Coop. Sur.).

HORN FLY (*Haematobia irritans*) - MISSISSIPPI - Increased slightly on cattle in Oktibbeha County; 3-4 per head present. (Dinkins).

BLACK FLIES - ALABAMA - Hatch heavy in Auburn area, Lee County. Large numbers feeding on horses in local stable. (Shell, Ledbetter).

SHORT-NOSED CATTLE LOUSE (Haematopinus eurysternus) - TEXAS - Continues to increase; moderate to heavy on cattle near Bryan, Brazos County. (Cooper). OKLAHOMA - Mostly this species averaged 2 or more per hair part on cattle checked in Payne, Noble, and Lincoln Counties. Reported heavy in Cotton County and moderate in Marshall County. (Okla. Coop. Sur.).

HOG LOUSE (Haematopinus suis) - OKLAHOMA - Continues moderate on hogs in Marshall County. (Okla. Coop. Sur.).

TICKS - OKLAHOMA - Total of 258 ticks taken from deer and elk shot in vicinity of Wichita Wildlife Refuge in Comanche County, November 19-23, 1966. The following 244 ticks were taken from 24 deer: Ixodes scapularis 124, Dermacentor albipictus 119, and Amblyomma americanum 1. The following 34 ticks were taken from elk: I. scapularis 31, D. albipictus 2, and A. americanum 1. (Okla. Coop. Sur.). TEXAS - Amblyomma americanum heavy on cattle near Goliad County. One cow paralyzed. (Hajdik).

NORTHERN FOWL MITE (Ornithonyssus sylviarum) - TEXAS - Moderate to heavy in several poultry houses near Gonzales, Gonzales County. (Walker).

BENEFICIAL INSECTS

LADY BEETLES - NEW MEXICO - Light to medium on alfalfa and wheat in Roswell area, Chaves County; light on alfalfa and barley south of Las Cruces, Dona Ana County. (Mathews, Elson).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CARIBBEAN FRUIT FLY (Anastrepha suspensa) - FLORIDA - Larva collected on jasminorange at Ft. Lauderdale, Broward County, (Runfeldt, Feb. 24); 15 larvae collected from calamondin at Sebring, Highlands County, (Morris, Mar. 6); larvae taken from loquat at Hialeah, Dade County, (Stegmaier, Mar. 6); single larva taken from grapefruit at North Miami, Dade County, (DeHaven, Mar. 10). Adults continue to be collected in south Florida. (Fla. Coop. Sur.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - TEXAS - New infestations of approximately 5 mounds about 2 years old found at 15-foot intervals on roadside near Plantersville and Richards in Grimes County. Reproductives have already swarmed this year. (Barham).

GRASSHOPPERS - OKLAHOMA - Surveys at 7 rangeland stops in Atoka and Latimer Counties averaged 0.75 egg pod per square yard and 1 egg pod per square yard at 3 rangeland stops in Greer County. (Okla. Coop. Sur.).

Weather continued from page 196.

TEMPERATURE: Arctic air from Canada poured into the northern Plains holding average temperatures to 5-18° below normal for the second consecutive week. As the cold air advanced southward and eastward, temperatures which had neared record high levels for so early in the season plunged to near record cold. By the weekend, hard freezes had penetrated deep into Dixie, causing heavy damage in the peach and apple orchards of the Carolinas and Georgia. Pacific air cooled portions of Washington, Oregon, and northern California but temperature over parts of the Great Basin continued to average above normal as it has for the past several weeks. (Summary supplied by Environmental Data Service, ESSA).

INSECT DETECTION

New State Records

AN EPIPASCHID MOTH (*Epipaschia zelleri*) - DELAWARE - Collected in blacklight trap by J. Franklin, at Dover on August 8, 1965. Det. by R. W. Hodges. (Burbutis).

A MOSQUITO (*Aedes cinereus*) - VIRGINIA - Collected in traps in Franklin, Pittsylvania, and Roanoke Counties during 1966 by W. J. Gladney. Det. by A. Stone. (p. 201).

AN ANT (*Pheidole javana*) - HAWAII - Collected in upper Manoa Valley, Oahu, November 21, 1966, and at Hilo, Hawaii Island, December 27, 1966. Det. by D. R. Smith. (p. 214).

AN ANT (*Strumigenys rogeri*) - HAWAII - Collected November 21, 1966 in upper Manoa Valley, Oahu. Det. by D. R. Smith . (p. 214).

AN ANT (*Solenopsis* (*Diplorhoptrum*) sp.) - HAWAII - This new subgenus collected in upper Manoa Valley, Oahu, September 25, 1966. Det. by D. R. Smith. (p. 214).

New County Records

AN ARMORED SCALE (*Melanaspis tenebricosa*) - FLORIDA - Collected on maple in Dixie County. (p. 200).

AN ARMORED SCALE (*Chionaspis longiloba*) - FLORDIA - Collected on pussy willow in Dixie County. (p. 200).

SMALLER EUROPEAN ELM BARK BEETLE (*Scolytus multistriatus*) - OHIO - Collected in Tiffin, Seneca County. (p. 201).

CORRECTIONS

CEIR 17(10):163 - COWPEA APHID (Aphis medicaginis) should be (Aphis *craccivora*).

CEIR 17(11):174 - PEA APHID (Acrythosiphon pisum) should be (Ac*yr*thosiphon pisum).

CEIR 17(11):179 - IMPORTED FIRE ANT (Solenopsis saevissima) should be (Solenopsis saevissima *richteri*). This correction should be made in first complete note on this page and in second entry under New County Records.

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 3/14, BL - Black cutworm (*Agrotis ipsilon*) 1, salt-marsh caterpillar (*Estigmene acrea*) 1, granulate cutworm (*Feltia subterranea*) 10, yellow-striped armyworm (*Prodenia ornithogalli*) 1, armyworm (*Pseudaletia unipuncta*) 1. Sanford , 2/28-3/3, BL - Black cutworm 5, granulate cutworm 13, tobacco budworm (*Heliothis virescens*) 1, corn earworm (*H. zea*) 2, yellow-striped armyworm 3. SOUTH CAROLINA - Charleston, 3/6-12, BL, temp. 40-88°, precip. 1.80 - Black cutworm 2, granulate cutworm 9, armyworm 3, southern potato wireworm (*Conoderus falli*) 26 (first occurrence 3/3). TEXAS - Brownsville - 3/4-10, 2 BL, temp. 45-84°, trace precip. - Black cutworm 26, salt-marsh caterpillar 1, granulate 189, tobacco budworm 3, corn earworm 109, variegated cutworm (*Peridroma saucia*) 9, yellow-striped armyworm 36, tobacco hornworm (*Manduca sexta*) 1, armyworm 160, beet armyworm (*Spodoptera exigua*) 5, cabbage looper (*Trichoplusia ni*) 32; 3/11-17, 2 BL, temp. 62-87°, trace precip. - Black cutworm 10, salt-marsh caterpillar 5, granulate cutworm 24, tobacco budworm 13, corn earworm 96, variegated cutworm 8, yellow-striped armyworm 2, armyworm 111, beet armyworm 1, cabbage looper 23.

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1966

(continued from page 186)

POTATOES, TOMATOES, PEPPERS

Highlights:

COLORADO POTATO BEETLE caused severe damage to potatoes in a few areas in Maine, and persisted in spite of treatments previously successful in Rhode Island. Populations were moderate to severe in New Jersey and higher than usual on commercial potatoes and tomatoes in Delaware. Colorado potato beetle damaged untreated potatoes and tomatoes in eastern Maryland, and damaged potatoes for the second consecutive year in Colorado. FLEA BEETLES and WIREWORMS were of concern in several potato-growing areas. POTATO TUBERWORM was heavy on fall potatoes and caused some heavy losses to peppers on the Eastern Shore of Virginia. TOMATO FRUITWORM was important on tomatoes in Alabama and caused losses to potatoes and tomatoes in southern and eastern Kansas. BEET ARMYWORM was a problem on tomatoes in Nevada and California. BLACK CUTWORM damaged newly set tomatoes in Maryland and commercial potatoes in Rhode Island. EUROPEAN CORN BORER was serious on peppers in New Jersey, potatoes in Delaware, and potatoes and peppers in eastern Virginia. GREEN PEACH APHID increased on potatoes in Delaware and was heavy on peppers in Delaware and Maryland. Controls were necessary on tomatoes in Nevada and seed potatoes in Oregon. LYGUS BUGS damaged potatoes and tomatoes in Montana. TWO-SPOTTED SPIDER MITE was severe on tomatoes in New Jersey and on potatoes in Washington.

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) varied light to moderate in MAINE; larvae were abundant in spots and caused severe damage to potato. Populations persisted in spite of treatments that had been very effective in previous years in RHODE ISLAND. Colorado potato beetle was more generally distributed than in past years in CONNECTICUT. In NEW JERSEY, populations were moderate to severe on potatoes, tomatoes, and eggplants. Infestations in commercial potatoes and tomatoes in DELAWARE were higher this year than in most recent years. Colorado potato beetle was generally heavy in the spring and caused considerable damage to unprotected potatoes and tomatoes on the lower Eastern Shore of MARYLAND. Populations were less numerous on potatoes in VIRGINIA than in 1965. For the first time since 1962, untreated plots were not completely defoliated. Infestations were completely controlled in the commercial-growing areas of ALABAMA. Colorado potato beetle became active in home gardens in late April and was heavy in many areas of OKLAHOMA by late May. Populations were light in most areas of KANSAS being heaviest in the northeast area. Potatoes were damaged for the second consecutive year in Weld County, COLORADO, with some controls required. This leaf beetle was generally noneconomic throughout commercial potato-growing areas of NORTH DAKOTA. Adults became numerous in potato fields throughout southern IDAHO in late June. By early July, adult and larval feeding caused severe defoliation in Fremont County. Adult movement from solanaceous weeds to potato fields was common in Bonneville and Power Counties, Idaho.

TOBACCO FLEA BEETLE (Epitrix hirtipennis) caused early damage to seedling tomatoes in northern CALIFORNIA. TUBER FLEA BEETLE (Epitrix tuberis) was collected on potatoes in Jackson County, OREGON, for the first time. Damage in other infested areas of the State was much less than usual. Unspecified FLEA BEETLES infested potatoes in many parts of the Gallatin Valley and Livingston areas of MONTANA. Control was required on tomatoes at Roundup, Musselshell County. POTATO FLEA BEETLE (Epitrix cucumeris) was light to moderate on potatoes in the northern Red River Valley of NORTH DAKOTA. Severe damage occurred in isolated untreated fields in Pembina and Walsh Counties. Flea beetles were a problem on potatoes in home gardens during late May and June in Finney County, KANSAS. In OHIO, various species were abundant on eggplant and tomatoes in the central section during

June. Potato flea beetle was present during early May in PENNSYLVANIA, but the seasonal abundance was light. Epitrix spp. adults were normal during the spring on potatoes, tomatoes and peppers in all sections of MARYLAND, and populations were well controlled on commercial plantings. Potato flea beetle adults were numerous on potatoes and tomatoes in many areas of DELAWARE causing moderate to heavy injury. Populations decreased from the past 2 years in CONNECTICUT. A small potato flea beetle population overwintered in RHODE ISLAND and remained negligible during the growing season. Infestations of overwintered adults ranged light to heavy during late June and early July in MAINE. Damage to potato foliage paralleled population levels and began to decrease by mid-July.

A SAP BEETLE (Stelidota geminata) migrated from strawberries late in the season to tomatoes in Berrien County, MICHIGAN. Fruits on or near the ground harbored the greatest beetle concentrations. A LEAF BEETLE (Chrysochus cobaltinus) was severe on foliage of garden potatoes in Jackson County, OREGON, in July. BLISTER BEETLES (Epicauta spp.) damaged tomatoes in scattered areas of OKLAHOMA during summer months.

WIREWORMS (Limonius spp.) caused less damage to potatoes than in 1965 in OREGON. GREAT BASIN WIREWORM (Ctenicera pruinina) damaged potatoes in Yakima and Franklin Counties, WASHINGTON. Great Basin wireworm infested large acreages of potatoes in southwestern IDAHO. These areas were cultivated for the first time in 1966 from what had been sagebrush rangeland. Great Basin wireworm, a dryland species, is expected to cause severe losses to potatoes in this area for the next 2-3 years, although the potatoes are sprinkler irrigated. Organophosphorus applications give poor control of these pests in Idaho. Unspecified wireworms damaged potatoes grown in untreated soil in MONTANA. SOUTHERN POTATO WIREWORM (Conoderus falli) caused negligible damage to potatoes in FLORIDA. POTATO STALK BORER (Trichobaris trinotata) was observed in the lower stems of potato plants in Cass County, NEBRASKA, for a new county record.

POTATO TUBERWORM (Phthorimaea operculella) infested isolated potato fields in Mobile and Baldwin Counties, ALABAMA. Populations were normal in FLORIDA, causing scattered damage up to 5 percent in some fields. Overall damage for area was less than 1 percent. Potato tuberworm was light on foliage of spring potatoes on the Eastern Shore of VIRGINIA, but some heavy infestations developed on the fall crop. Small larvae were observed in stems of fall peppers in the same area where losses ranged 1-50 percent of the plants. Stored potatoes, possibly from out of the State, were infested in York County, PENNSYLVANIA. TOMATO FRUITWORM (Heliothis zea) was the most important pest of tomatoes throughout the season in ALABAMA. Tomato fruitworm was light throughout northern KANSAS, but caused considerable losses to potatoes and tomatoes in southern and eastern areas of the State. Populations on tomatoes were light to moderate with losses at a low level in COLORADO, and lightly damaged tomatoes in UTAH.

STALK BORER (Papaipema nebris) damaged few tomato plants in northeast KANSAS during June. Probably this species, lightly damaged tomatoes in Aroostook County, MAINE, in early July. BEET ARMYWORM (Spodoptera exigua) was heavy on tomatoes and required control in Clark County, NEVADA, during May and was a problem on tomatoes in CALIFORNIA. Beet armyworm damaged tomatoes in a 400-acre field in Manatee County, FLORIDA.

FALL ARMYWORM (Spodoptera frugiperda) larvae infested potatoes in the Ronan area of MONTANA, where weather conditions were favorable for development in July and August. CABBAGE LOOPER (Trichoplusia ni) populations reached high levels on tomatoes and fall potatoes in VIRGINIA. A widespread, naturally occurring nuclear polyhedrosis virus and prolonged rain checked the infestations by October. Larvae were relatively light and spotty during summer in MICHIGAN. Larvae damaged potato foliage in Montcalm County in early July and major adult flights occurred in late September. In COLORADO, larval numbers ranged low to moderate on tomatoes and losses were low. Cabbage looper was heavy on tomatoes during May and required control in Clark County, NEVADA. A NOCTUID MOTH (Pseudoplusia includens) caused considerable damage to tomatoes in Manatee County, FLORIDA, and required controls during October. BLACK CUTWORM (Agrotis ipsilon) larvae were very destructive to newly set tomatoes during May in Wicomico County, MARYLAND. Larvae did considerable damage to tubers in several commercial potato fields during summer in RHODE ISLAND. Some black cutworm feeding damage occurred on potatoes in irrigated fields in WISCONSIN during August.

VARIEGATED CUTWORM (Peridroma saucia) damaged young tomato plants in southeast ARKANSAS, with some controls required. CUTWORM damage was lower than usual in FLORIDA. Unspecified cutworms caused heavy losses to tomatoes early in the season in NEW JERSEY. Infestations on potatoes during midseason were heavier than during 1965. Yield losses up to 20 percent occurred in Atlantic and Camden Counties, New Jersey. Cutworms caused widespread damage to potato tubers in CONNECTICUT, and damage was severe on tomato and pepper transplants.

EUROPEAN CORN BORER (Ostrinia nubilalis) was a serious problem on peppers during the latter part of the growing season in NEW JERSEY, and infestations in sweet peppers and potatoes were very high in DELAWARE. European corn borer was the most numerous in 20 years in VIRGINIA. Single night moth catches in the light trap at Painter, on the Eastern Shore, exceeded the total of any of the preceeding 5 years. Potatoes, sweet corn, and peppers were heavily damaged. Untreated peppers that matured in August and early September were 100 percent infested. Damage was very light on pimento peppers in the northern commercial-growing area of ALABAMA.

TOMATO PINWORM (Keiferia lycopersicella) infestations in tomatoes in CALIFORNIA were more severe and more widespread than for several years.

APHIDS began migrating to potatoes during early June in the Houlton and Presque Isle areas of MAINE. POTATO APHID (Macrosiphum euphorbiae) was dominant. BUCKTHORN APHID (Aphis nasturtii) and GREEN PEACH APHID (Myzus persicae) were also present. Parasitized and diseased aphids were abundant during August in this area of Maine. Potato aphid was not economically significant in RHODE ISLAND. Unspecified APHIDS were not as serious as in past years in CONNECTICUT. Green peach aphid was significantly less abundant than in 1965 on tomatoes, potatoes, and peppers in NEW JERSEY. This could have been due to the extremely hot weather during early July. Populations continued to increase on commercial potatoes in DELAWARE, and were very heavy on sweet peppers. Green peach aphid caused heavy damage to a 30-acre pepper field in Queen Annes County, MARYLAND. Green peach aphid populations were at the lowest levels on potatoes for the past 9 years in St. Johns County, FLORIDA. Potato aphid was light to moderate on potatoes in the San Luis Valley of COLORADO. Controls were used in some seed production fields and a few commercial fields. Populations were light in Weld County. Green peach aphid required controls on tomatoes in Clark County, NEVADA, in March. Potato aphid infested tomatoes in San Joaquin County, CALIFORNIA. Green peach aphid was heavy and required extensive controls on seed potatoes in Klamath and Douglas Counties, OREGON, late in the season. Populations were lower on potatoes in eastern WASHINGTON than usual. Green peach aphid failed to develop on early season potatoes in IDAHO, probably due to several severe late-spring frosts. In Bingham County, Idaho, populations were restricted to margins of potato fields by August 12.

LYGUS BUGS (Lygus spp.) were present in destructive numbers on tomatoes and potatoes in MONTANA. TARNISHED PLANT BUG (Lygus lineolaris) was light on potatoes in Grand Forks County, and moderate in Pembina County, NORTH DAKOTA. FALSE CHINCH BUG (Nysius ericae) populations were high on potatoes in the San Luis Valley of COLORADO, with controls necessary in some fields. LEAFHOPPERS were a problem in potato fields near Bozeman, MONTANA. POTATO LEAFHOPPER (Empoasca fabae) was light on potatoes in PENNSYLVANIA. THRIPS caused injury to tomato plantings in Marshall County, KANSAS, during June.

SEED-CORN MAGGOT (Hylemya platura) was detected in potatoes infected with black leg disease in Grand Forks and Ransom Counties, NORTH DAKOTA. Seed-corn maggot , lightly damaged tomatoes in Aroostook County, MAINE, in early June. A LEAF MINER FLY, probably Liriomyza pusilla, damaged leaves of tomatoes in commercial-growing areas of ALABAMA.

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) was severe on fresh market and commercial tomatoes in NEW JERSEY and continued severe on potatoes in WASHINGTON. SPIDER MITES (Tetranychus spp.) damaged tomatoes in scattered areas of OKLAHOMA during the summer.

TOMATO RUSSET MITE (Aculops lycopersici*) was a general pest of tomatoes in CALIFORNIA and required control treatments.

GARDEN SYMPHYLAN (Scutigerella immaculata) became increasingly important in the Willamette Valley of OREGON, particularly on potatoes, where it damaged more tubers than did flea beetles.

BEANS AND PEAS

Highlights:

MEXICAN BEAN BEETLE was troublesome on home garden beans in several areas, but was heavy in Delaware in early June. COWPEA CURCULIO was serious on table peas in Alabama where it caused loss of sales for commercial canners. WESTERN BEAN CUTWORM damage in Idaho exceeded that of 1962 when damage to beans was severe. GREEN CLOVERWORM adult flights were heavy over much of the Lower Peninsula of Michigan in late summer but no larval buildup occurred on beans. PEA APHID required controls on peas in Idaho by July. TWO-SPOTTED SPIDER MITE damaged beans in California where infestations occurred late in the season.

MEXICAN BEAN BEETLE (Epilachna varivestis) in COLORADO ranged from zero up to 5 adults and 10 larvae per bean plant in the Arkansas Valley, on the Western Slope, and in parts of the northeast area. Populations heavier than in 1965 damaged some beans in Scotts Bluff County, NEBRASKA. The beetle was found for the first time in Riley County, KANSAS, making a total of 7 counties known to be infested. Populations severely damaged or totally destroyed some home garden snap beans in the northeast area. Lima and pole beans were also seriously damaged throughout ALABAMA and peas in the southern section. In central OHIO, Mexican bean beetle larvae appeared in early July on bush beans and adults emerged in early August. Most serious infestations in MARYLAND occurred in home gardens on snap and pole beans late in the season. Mexican bean beetle infestations were heavy in DELAWARE during early June on lima and snap beans.

Four other leaf beetles also seriously damaged beans and peas. In OREGON, large numbers of second-generation adults of WESTERN SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata undecimpunctata) emerged late and severely damaged beans in Douglas County. PALE-STRIPED FLEA BEETLE (Systena blanda) was economically important in COLORADO and was severe in a field of pinto beans in Chase County, NEBRASKA. Although BEAN LEAF BEETLE (Cerotoma trifurcata) was very light in most of OKLAHOMA, it seriously injured garden beans in eastern and south-central KANSAS where no controls were applied. Present in ALABAMA throughout 1966, bean leaf beetle only damaged peas and beans in the 2 to 6-leaf stage. POTATO FLEA BEETLE (Epitrix cucumeris) was moderate on beans in Androscoggin County, MAINE, in early June.

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*The scientific name of tomato russet mite (Aculus lycopersici (Massee)) has been changed to Aculops lycopersici (Massee). See Keifer, H. H. 1966. Eriophyid Studies B-21. Entomol. Calif. Dept. Agr. Nov. 23, and Reference List, General Index January 1967, p. 5.

Other beetle pests of beans and peas were COWPEA CURCULIO (Chalcodermus aeneus) and a SAP BEETLE (Meligethes nigrescens). Cowpea curculio severely infested table legumes in south FLORIDA. Curculio populations had been allowed to build up on wild cowpeas growing near cultivated fields. Due to a decrease in hairy vetch plantings, there were fewer adults of M. nigrescens on pole beans in western OREGON. The most serious pest of table peas in ALABAMA, cowpea curculio caused the loss of sales for commercial canners in the southern area.

Larvae of several noctuids infested beans and peas. Light trap collections of WESTERN BEAN CUTWORM (Loxagrotis albicosta) in IDAHO exceeded those of 1962, when bean damage was severe. General bean injury ranged 3-10 percent in 1966. In COLORADO, this pest was of some economic importance on beans. DINGY CUTWORM (Feltia subgothica) damaged the edges of a commercial pea field in PENNSYLVANIA. GRANULATE CUTWORM (Feltia subterranea) and other cutworms were a problem on cowpeas in FLORIDA. A NOCTUID MOTH (Pseudoplusia includens), the most abundant in a complex of plusiine loopers, infested beans during the spring at Belle Glade, Florida. CABBAGE LOOPER (Trichoplusia ni) infestations were variable on beans in CALIFORNIA. Although a heavy flight of GREEN CLOVERWORM (Plathypena scabra) adults flew over much of Lower MICHIGAN from late July through August, larval buildup was prevented by weather factors and natural control agents. There were other troublesome Lepidoptera on beans, such as BEAN LEAF ROLLER (Urbanus proteus) which required control in Seminole County, FLORIDA, during the late summer, and LIMA-BEAN POD BORER (Etiella zinckenella) which infested beans in CALIFORNIA.

Infesting a majority of peas in Lewis and Nez Perce Counties, IDAHO, PEA APHID (Acyrthosiphon pisum) required treatment by July. It also damaged home garden peas in a few areas of OKLAHOMA during late April. Generally below normal and well controlled on commercial peas on the Eastern Shore, MARYLAND, this aphid was high on peas in DELAWARE during mid-May. Thought to be a vector of a widely distributed and damaging cowpea mosaic, COWPEA APHID (Aphis craccivora) damaged home gardens and commercial plantings throughout ALABAMA. This aphid as well as BEAN APHID (Aphis fabae) infested beans respectively in Fresno County and in a few other locations of CALIFORNIA. BEAN THRIPS (Caliothirps fasciatus) infested beans in Santa Barbara County, California.

Heavy numbers of SEED-CORN MAGGOT (Hylemya platura) on pole beans in May resulted in the replanting of 350 acres in Polk County, OREGON. A SCIARID MIDGE (Bradysia impatiens) damaged pea seedlings in a greenhouse and in the field in Skagit County, WASHINGTON.

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) populations in most areas of CALIFORNIA damaged beans when infestation developed late. In WASHINGTON, this pest continued severe on beans. Although it infested field beans in Arenec and Huron Counties, MICHIGAN, during late August, major problems were relatively scarce. During midsummer, Tetranychus spp. populations reached injurious levels in several lima bean fields on the Eastern Shore of MARYLAND. In IDAHO, Tetranychus spp. severely damaged beans in southern Twin Falls County.

COLE CROPS

Highlights:

CABBAGE LOOPER damaged commercial cabbage in Wisconsin and was unusually numerous on several cole crops in Oregon. Losses were severe and control costs double those of 1965 in Oregon. This looper caused losses to lettuce in Colorado. Cabbage looper populations reached high levels on cole crops on the Eastern Shore of Virginia and were serious on crucifers in Maryland. A FALSE CABBAGE LOOPER damaged cole crops in Alabama and recommended insecticides did not give satisfactory results in Florida. YELLOW-MARGINED LEAF BEETLE was serious on cole crops in gulf coast areas of Mobile and Baldwin Counties, Alabama. CABBAGE MAGGOT was serious in Maine, Rhode Island, and Connecticut, and was a problem on cole crops in California.

CABBAGE LOOPER (Trichoplusia ni) moths were detected in blacklight traps July 15 in WISCONSIN. Larvae damaged commercial cabbage by July 29, and caused heavy damage to several other crops in a few central locations by August 12. Moderate populations were found on cauliflower at Carrington, NORTH DAKOTA. Cabbage looper was unusually numerous on broccoli and cauliflower in Marion, Clackamas, and Multonomah Counties, OREGON. Two generations occurred this year and continued into October due to a mild fall. Losses were severe and control costs double those of 1965. Cabbage looper caused considerable loss to lettuce in Otero County, COLORADO. Cabbage in home gardens was damaged in a few areas of OKLAHOMA during late May and June. Larvae were also noted on turnip leaves during September. Cabbage looper and a FALSE CABBAGE LOOPER (Pseudoplusia includens) damaged cabbage, collards, and other cole crops throughout ALABAMA. Normal high populations on unsprayed cabbage and broccoli were eliminated by a polyhedrosis virus in April in FLORIDA. Infestations were not satisfactorily controlled on cabbage with current recommended chemicals at Sanford, Seminole County. Cabbage looper was the predominant looper on crucifers at Belle Glade during spring. Favored by ideal weather during July and August, cabbage looper populations reached very high levels on cole crops in VIRGINIA. Widespread, naturally occurring nuclear polyhedrosis virus in mid-September checked populations by October 1. Cabbage looper became a serious problem on crucifers from midsummer to late fall in MARYLAND. Control of this pest was difficult. Populations were less numerous than in 1965 in NEW JERSEY and subsequently less damaging.

IMPORTED CABBAGEWORM (Pieris rapae) was less numerous than in 1965 in NEW JERSEY, and less damaging. Larvae became abundant on several cruciferous crops in MARYLAND early in season, but were generally well controlled on commercial plantings. Adults were active in many Lower MICHIGAN counties in late April and throughout May. A large larval brood completed development on cruciferous weeds and an extremely heavy adult flight occurred in early July. Sprays kept commercial problems relatively low in Michigan. Imported cabbageworm fed heavily on cole crops in WISCONSIN by July 15. Adults were abundant and laying eggs by July 29. Larvae caused heavy damage to many home gardens early in August. Larvae were abundant on cauliflower at Carrington, NORTH DAKOTA. Populations were moderate on commercial cabbage plantings in COLORADO. Imported cabbageworm damaged cabbage in Santa Barbara and Alameda Counties, CALIFORNIA. Larvae were among the most destructive pests of cabbage, collards, and other cole crops in ALABAMA.

BLACK CUTWORM (Agrotis ipsilon) was heavy in untreated cabbage at Belle Glade, Palm Beach County, FLORIDA, during the fall. DIAMONDBACK MOTH (Plutella xylostella) infested collards in Dade County, Florida, during February. Larvae damaged turnips and mustard in isolated areas throughout ALABAMA.

Large numbers of WESTERN SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata undecimpunctata) second-generation adults emerged late and severely damaged seedling brussels sprouts and cabbage in Douglas County, OREGON. YELLOW-MARGINED LEAF BEETLE (Microtheca ochroloma) was serious on cole crops along the gulf coast in Mobile and Baldwin Counties, ALABAMA. FLEA BEETLES (Phyllotreta spp.) were heavy in the spring and caused typical injury to unprotected crucifers over most of MARYLAND. Unspecified flea beetles were severe on seed turnips in Douglas County, OREGON, during July, and various species were abundant on cabbage in central OHIO during June.

CABBAGE APHID (Brevicoryne brassicae) was heavy in September in OREGON. Damage was light on 300 acres of cabbage in Marion County. Losses amounted to 30 percent on 100 acres of cabbage in Columbia County. Relatively high populations occurred on cole crops all year in CALIFORNIA. Cabbage aphid was a serious pest of cabbage and collards throughout ALABAMA. Populations were normal on cabbage but high on rutabaga, broccoli, and brussels sprouts at Hastings, St. Johns County, FLORIDA. Cabbage aphid was generally light on cabbage during spring and summer months in DELAWARE. TURNIP APHID (Hyadaphis pseudobrassicae) was damaging all summer and winter on turnips and mustard in ALABAMA. Populations were heavy, 300-500 per leaf, on home garden and commercial turnips in northeast OKLAHOMA during mid-November. GREEN PEACH APHID (Myzus persicae) infested cabbage at Sanford, FLORIDA, and was significantly less abundant than in 1965 on cruciferous crops in NEW JERSEY, probably due to extremely hot weather during early July in the latter State.

HARLEQUIN BUG (Murgantia histrionica) damaged cole crops in ALABAMA, but was not as serious as it was several years ago, probably due to development of parasites. Unusual populations developed on cabbage in Amador County, CALIFORNIA. FALSE CHINCH BUG (Nysius ericae) caused replanting of several acres of cauliflower, broccoli, and kale in Marion County, OREGON, during September.

CABBAGE MAGGOT (Hylemya brassicae) severely damaged cabbage in Cumberland County, MAINE, during July. Cabbage maggot caused serious economic injury to rutabaga in Westerly, RHODE ISLAND, and was probably the most difficult pest of vegetables to control in the State. Cabbage maggot infested 75 percent of the cabbage crop early in the season in CONNECTICUT but was not a problem late in the season. This pest also infested radish and turnip in Connecticut. Populations were less numerous than in 1965 in NEW JERSEY. Large numbers of eggs were found on cabbage in Washington County, PENNSYLVANIA, but the pest was not as damaging as in 1965. Cabbage maggot was a problem on cole crops in Santa Cruz and Alameda Counties, CALIFORNIA.

MOLE CRICKET populations were unusually high during the fall on cabbage seedbeds in FLORIDA.

CUCURBITS

Highlights:

CABBAGE LOOPER necessitated repeated treatments on melons in California and SQUASH VINE BORER was serious on cucumber and cantaloup in central and southern Alabama. STRIPED CUCUMBER BEETLE caused extensive injury to commercial cucurbits on the lower Eastern Shore of Maryland. MELON APHID was of concern to commercial growers of watermelons in Oklahoma. Various SPIDER MITES damaged commercial melons in Oregon, Arizona, and Maryland.

Full-grown WHITE-LINED SPHINX (Celerio lineata) larvae moved from weedy rye to 20 acres of cucumbers in Washington County, OREGON, in June causing light damage before control was established. CABBAGE LOOPER (Trichoplusia ni) was severe on melons throughout CALIFORNIA and required repeated controls throughout the year. SQUASH VINE BORER (Melittia cucurbitae) was a serious pest of cucumbers and cantaloups in central and southern ALABAMA. DARK-SIDED CUTWORM (Euxoa messoria) damaged melons in Bedford County, PENNSYLVANIA.

STRIPED CUCUMBER BEETLE (Acalymma vittatum) was general but not conspicuous in RHODE ISLAND. Adults were abundant on many curcubits in Sussex County, DELAWARE, during May and June. High numbers of striped cucumber beetle caused extensive injury to young commercial cucurbits on the lower Eastern Shore of MARYLAND. Larvae caused noticeable injury to roots of cucumber plants in a large planting in Cecil County. Striped cucumber beetle was the most serious pest of cucumbers throughout ALABAMA and was heavy on cucumbers and other vine crops during the summer in OKLAHOMA. Striped cucumber beetle and SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) severely damaged cucumber and cantaloup plantings in Doniphan and Riley Counties, KANSAS. Spotted cucumber beetle was heavy on cucumbers and other vine crops during the summer in Oklahoma, but was not a major pest of cucurbits in Alabama. Diabrotica spp. were light on melons in Yolo County, CALIFORNIA.

SQUASH BEETLE (Epilachna borealis) appeared in small localized populations of usual abundance in RHODE ISLAND. Late in the season, adults and larvae of a SAP BEETLE (Stelidota geminata) damaged melons in Berrien County, MICHIGAN, after migrating from strawberries. Beetle concentrations were heaviest on fruits on or near ground.

SQUASH BUG (Anasa tristis) damaged squash and pumpkins in San Joaquin County, CALIFORNIA. Activity began in mid-May with egg laying beginning in late May. Moderate to heavy activity continued until mid-September. Squash bug was heavy on squash and related plants in many areas of NEW MEXICO.

POTATO APHID (Macrosiphum euphorbiae) infested squash in Fresno County, CALIFORNIA. MELON APHID (Aphis gossypii) caused concern to commercial watermelon growers in in some areas of OKLAHOMA during late August.

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) severely damaged melons and cucumbers in Douglas County, OREGON. Heavy populations of Tetranychus spp. on melons during the spring in Yuma County, ARIZONA, required controls. Heavy also in Wicomico County, MARYLAND, SPIDER MITES seriously injured several large watermelon plantings during July and August.

GENERAL VEGETABLES

Highlights:

BLACK CUTWORM and GRANULATE CUTWORM were heavy on lettuce in Florida during the spring. CUTWORMS were unusually prevalent and damaged many crops in California, and caused moderate losses to onions in western Colorado and heavy losses to asparagus in New Jersey. These pests were also troublesome on a wide variety of vegetables in several States. ARTICHOKE PLUME MOTH larvae caused severe damage to artichokes in California and damaged an experimental planting of this host in Oregon. SWEETPOTATO FLEA BEETLE caused extensive foliage injury to sweetpotato plants in Maryland. WIREWORMS were the most common pests of sweetpotatoes along the upper Arkansas River in Arkansas. GREEN PEACH APHID caused moderate to heavy damage to lettuce and necessitated controls on lettuce and sugarbeets in Arizona. ONION MAGGOT and ONION THRIPS were economic on onions in the Arkansas Valley of Colorado. GARDEN SYMPHYLAN increased in importance on vegetables in the Willamette Valley of Oregon.

BLACK CUTWORM (Agrotis ipsilon) peak populations occurred in June in the Willamette Valley, OREGON, but were far less numerous than in 1965. Some control was necessary on table beets in Lane County. In WISCONSIN, larvae appeared on vegetables in mid-June, and moths occurred from mid-May to late in September. In FLORIDA black cutworm predominated over GRANULATE CUTWORM (Feltia subterranea) in a heavy infestation on lettuce at Belle Glade in early spring. VARIEGATED CUTWORM (Peridroma saucia) caused light damage to various garden vegetables in NORTH DAKOTA. Unspecified CUTWORMS were also troublesome in North Dakota and were unusually prevalent and damaging to many crops in CALIFORNIA. Cutworms caused moderate onion losses in the Western Slope area of COLORADO, but caused heavy losses to asparagus in NEW JERSEY early in the season. Cutworm injury was widespread in RHODE ISLAND early in the summer. Cutworms fed extensively in VERMONT on a wide variety of vegetables, including asparagus and tomatoes. In NEW HAMPSHIRE, subterranean and climbing species were particularly troublesome. Although cutworms heavily damaged many crops in sections of Washington County, MAINE, in July, damage throughout the State remained average.

Four other noctuids infested vegetables. Requiring continuous controls, CABBAGE LOOPER (Trichoplusia ni) heavily damaged crops during the fall in Yuma, Maricopa, Pinal, and Pima Counties, ARIZONA. Infesting spring and fall lettuce, this looper required strict control in Dona Ana County, NEW MEXICO. It also caused considerable losses to lettuce in Otero County, COLORADO. At Belle Glade, FLORIDA, cabbage looper was the predominant looper on celery during the spring, and at Sanford caused light damage to commercial celery. In spite of weekly applications of a recommended insecticide, SOUTHERN ARMYWORM (Prodenia eridania) defoliated 50 percent of a half-acre of sweetpotatoes in Alachua County, Florida. BEET ARMYWORM (Spodoptera exigua) damaged lettuce in Yuma, Maricopa, Pinal, and Cochise Counties, ARIZONA, and was a problem to vegetable growers in CALIFORNIA. Finally, STALK BORER (Papaipema nebris) was general in RHODE ISLAND but caused less injury than in previous years.

Other Lepidoptera damaged vegetables. In CALIFORNIA, MORNING-GLORY LEAF MINER (Bedellia somnulentella) damaged sweetpotato vines in Merced and Fresno Counties. Larvae of a LEAF ROLLER MOTH (Platynota stultana) damaged truck crops in a few counties, and ARTICHOKE PLUME MOTH (Platyptilia carduidactyla) larvae severely damaged artichokes in all growing areas. In OREGON, artichoke plume moth larvae caused ten percent damage in an experimental artichoke planting in Tillamook County. EUROPEAN CORN BORER (Ostrinia nubilalis) was the most numerous in 20 years in eastern VIRGINIA. Single night moth catches in the light trap at Painter exceeded the entire take in any of the preceeding 5 years.

Several Coleoptera were also troublesome on vegetables. Two weevils were pests in CALIFORNIA. VEGETABLE WEEVIL (Listroderes costirostris obliquus) required control in several vegetable-growing areas and another WEEVIL (Brachyrhinus cribricollis) damaged artichokes in Santa Barbara County. WESTERN SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata undecimpunctata) caused some damage in late August in Marion, Linn, and Benton Counties, OREGON. SPOTTED ASPARAGUS BEETLE (Crioceris duodecimpunctata) and ASPARAGUS BEETLE (C. asparagi) were general in RHODE ISLAND but in lower abundance than in 1965. Found wherever asparagus was grown in MONTANA, asparagus beetle was abundant in many irrigated areas in the Yellowstone Valley. Asparagus beetle was reported infrequently in OHIO and was light in most areas of DELAWARE. GOLDEN TORTOISE BEETLE (Metriona bicolor) adults were common and caused conspicuous foliage injury to sweetpotatoes in Wicomico County, MARYLAND. Numerous adults of SWEETPOTATO FLEA BEETLE (Chaetocnema confinis) caused extensive foliage injury to newly set sweetpotato plants in Wicomico County, Maryland, during late May and June. Light populations of POTATO FLEA BEETLE (Epitrix cucumeris) were evident in gardens at several locations in NORTH DAKOTA. Heaviest in Yuma and Maricopa Counties, ARIZONA, DESERT CORN FLEA BEETLE (Chaetocnema ectypa) and FLEA BEETLES (Phyllotreta spp.) damaged vegetables during late spring and fall. A slight increase in flea beetle populations in NEW MEXICO was evidenced by a higher incidence of Stewart's wilt disease. TOBACCO WIREWORM (Conoderus vespertinus) and a WIREWORM (Melanotus communis) were the most common species found on sweetpotatoes along the upper Arkansas River in ARKANSAS.

GREEN PEACH APHID (Myzus persicae) infestations were general in CALIFORNIA during most of 1966. In ARIZONA, this aphid caused moderate to heavy damage to lettuce during the spring and required controls on lettuce and sugarbeets in Pinal and Maricopa Counties during the fall. In FLORIDA, green peach aphid damage was light on commercial celery at Sanford and light on a commercial bell pepper field at Delray Beach, Palm Beach County. Green peach aphid in usual numbers on lettuce, endive, and escarole resulted in losses from lettuce mosaic virus in NEW JERSEY. LETTUCE ROOT APHID (Pemphigus bursarius) developed populations on lettuce in San Mateo County, CALIFORNIA. MELON APHID (Aphis gossypii) was medium to heavy on vegetables and melons during spring and fall in Maricopa, Yuma, and Pinal Counties, ARIZONA.

ONION MAGGOT (Hylemya antiqua) populations were economically important on onions in the Arkansas Valley, COLORADO, and extensive control was necessary in the Pueblo County area. Losses to onions ranged low to moderate in the northeastern area and were moderate in the Western Slope area of Colorado. For MONTANA only one occurrence of onion maggot was reported in 1966, compared with widespread destruction in 1965. In MICHIGAN, first onion maggot adults were caught in late May in Allegan County. By mid-June larval infestations occurred in Ingham, Allegan, and Newaygo Counties. Third-generation adults emerged in early September in the Grant area, Newaygo County. SPINACH LEAF MINER (Pegomya hyoscyami) occurred in normal abundance on spinach, beets, and chard in RHODE ISLAND. CARROT RUST FLY (Psila rosae) damaged home garden carrots in the Pullman area of Whitman County, WASHINGTON. This pest of carrots was first observed in Washington in 1965, but previously unrecorded. LEAF MINER FLIES (Liriomyza spp.) lightly damaged commercial celery at Sanford, FLORIDA.

Although ONION THRIPS (Thrips tabaci) was economically important in the Arkansas Valley of COLORADO, losses to onions were low. Losses were low to moderate in the northeastern area and moderate in the Western Slope area. Populations ranged 2-20 thrips per umbel in southwestern IDAHO onion seed fields and required controls in Canyon County from late May until mid-August. In CALIFORNIA, onion thrips infested onions in several counties. Wild hosts served as reservoirs for general infestations of WESTERN FLOWER THRIPS (Frankliniella occidentalis) in California. In NEVADA, unspecified THRIPS were heavy and required control on green onions and garlic in Clark County during the spring.

LYGUS BUGS (Lygus spp.) were damaging in all growing areas of CALIFORNIA. These pests were medium on table beets grown for seed in Douglas County, OREGON, and reduced yields of unsprayed fields. Feeding injury of FOUR-LINED PLANT BUG (Poecilocapsus lineatus) adults and nymphs was widespread during June and July in many Lower MICHIGAN Counties.

Very heavy populations of FIELD CRICKETS (Gryllus spp.) seriously damaged vegetables and melons in areas of Yuma, Maricopa, and Pinal Counties, ARIZONA, throughout 1966. In CALIFORNIA, field cricket damage was more widespread than in many years.

AN ACARID MITE (Tyrophagus dimidiatus) infested spinach in Orange, Yolo, and Fresno Counties, CALIFORNIA. Because of improper handling of "mother bulbs" prior to storage during the previous fall, BULB MITE (Rhizoglyphus echinopus) infested most onion-seed fields at Twin Falls, IDAHO, and infestations were heavy in southwestern Idaho. TWO-SPOTTED SPIDER MITE (Tetranychus urticae) was significantly less severe on most vegetables in NEW JERSEY, but in western OREGON this spider mite was present in more than usual quantities in August and September. In CALIFORNIA, widespread damage by two-spotted spider mite was cumulative rather than acute. A SPIDER MITE (Aplonobia myops) was a local problem on asparagus in Orange County, California. BROWN WHEAT MITE (Petrobia latens) was heavy on garlic and required control in Lyon County, NEVADA, in late March through June. CLOVER MITE (Bryobia praetiosa) infested greenhouse lettuce in PENNSYLVANIA. A TARSONEMID MITE (Tarsonemus randsi) infested mushroom compost in Pennsylvania.

GARDEN SYMPHYLAN (Scutigerella immaculata) increased in importance on several vegetables in the Willamette Valley of OREGON, and damaged field planted crops in several locations in CALIFORNIA.

HAWAII INSECT REPORT

New State Records - Three ants reported for first time. Pheidole javana collected in upper Manoa Valley, Oahu, November 21, 1966, and in Hilo, Hawaii Island, December 27, 1966. This species occurs throughout Asia and the Pacific islands. Strumigenys rogeri collected November 21, 1966, at University of Hawaii Arboretum in upper Manoa Valley, Oahu, in dead, bored, sugarcane stalk in volunteer stand. This insect distributed throughout the Tropics and is found on other Pacific islands. Solenopsis (Diplorhoptrum) sp. collected in Woodlawn area of upper Manoa Valley, Oahu, September 25, 1966, and November 21, 1966. This is the first report of the subgenus Diplorhoptrum in the State. All determinations by D. R. Smith. (Huddleston, Fluker).

Pasture - HAWAIIAN BEET WEBWORM (Hymenia recurvalis) adults heavy on spiny amaranth in pastures at Kapahi, Kauai; averaged 40 per 5 sweeps. Adults also heavy on grounds of Kauai Branch Experiment Station in Kapaa. (Au).

Eggplant - POTATO APHID (Macrosiphum euphorbiae) moderate on 5 acres of eggplant in Nanakuli, Oahu; 50-75 percent of aphids parasitized by a braconid wasp (Aphidius testaceipes). Numberous adult wasps noted amid living and mummified aphids. (Funasaki, Suzukawa).

Fruit and Nuts - BLACK CITRUS APHID (Toxoptera aurantii) adults light on newly set fruits of macadamia in orchard in Hilo, Hawaii Island. Populations usually very low (trace) and of no importance. (Ooka). ORIENTAL FRUIT FLY (Dacus dorsalis) adults medium and very active in 3 acres of citrus in Haiku, Maui. (Takishita).

Ornamentals - Buildup of HAWAIIAN THRIPS (Thrips hawaiiensis) on gardenia blossoms throughout State anticipated within few weeks. Most gardenias now in bud stage and expected to bloom in late March. Feeding injury causes discoloration of blossoms. In Hilo, Hawaii Island, gardenias already in bloom are heavily infested with average of 50 adults and numerous nymphs per blossom. (Funasaki, Yoshioka).

Beneficial Insects - BLACK DUNG BEETLE (Copris incertus prociduus) adults in unusually heavy numbers attracted to lights in Kihei, Maui. This beetle purposely introduced to inhibit breeding of horn fly. (Akaka). MELASTOMA BORER (Selca brunella) larvae medium and active on Indian-rhododendron (Melastoma malabathricum) in Hanamaulu (Lihue District), Kauai. This is a 10-mile extension of range from original release point at Puhi. (Au). PUNCTURE-VINE STEM WEEVIL (Microlarinus lypriformis) larvae and adults heavy and causing heavy damage to nohu (Tribulus cistoides) within 2-acre area in Nanakuli, Oahu. (Au).

Miscellaneous Pests - GIANT AFRICAN SNAIL (Achatina fulica) - Three additional snails (approximately 2 inches in length) found in vicinity of previous finds in Kailua-Kona, Hawaii Island. Every effort being made to prevent this pest from becoming established on that island. On Maui, heavy populations very active in Waikapu but no significant damage noted on crops. (Yoshioka, Miyahira). An adult female VAGRANT GRASSHOPPER (Schistocerca vaga) collected on garage wall in Kekaha, Kauai. This is eighth specimen taken on island of Kauai. (Au).

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